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MINUTES OF FORTY-SEVENTH ANNUAL MEETING, KANSAS ACADEMY OF SCIENCE.

TOPEKA, December 22, 1914.

The forty-seventh annual meeting of the Kansas Academy of Science convened at eleven o'clock a. m. in the supreme court room, at the statehouse in Topeka, and was called to order by the president, W. A. Harshbarger.

The secretary's report of the forty-sixth annual meeting, at Baldwin, was accepted as printed in the twenty-sixth volume of the Transactions.

The secretary, in his office as librarian, reported the usual accessions by exchanges, except that from the German states the war had curtailed the number. The Smithsonian and other departments at Washington continue to send us their valuable publications. The bulletins from the Department of Agriculture have been especially frequent and valuable. For the past year we have been unable to get any binding done at the state printing plant, so that now we have more than 500 volumes awaiting binding. A few volumes have been obtained by purchase, and we continue our subscription to the *North American Flora*, of which twenty-five parts have now been issued.

The reports of the secretary-librarian were accepted.

The president named the following committees:

Nominations: Todd, Smith, McWharf.
Resolutions: Kent, Randall, Miss Meeker.
Program: Mrs. Smyth, Agrelius, Reiser.
Necrology: Dains, Willard, Wooster.
Audit: Knaus, Swenson.
Membership: Risser, Warfel, Todd.
Publication: Willard, Bailey, Shirk.
Press: Sayre, Lovewell.
Legislature: Bailey, Knaus, Wooster, Sayre, Yates.

The address of the retiring president being next in order, President Harshbarger gave a very interesting sketch of the past history and future prospects of the Academy. The address is printed in full in this volume.

Following is a list of the papers submitted for this meeting:

1. The Passing of the Orange (second paper). A. A. Graham.
2. Our Changing Seasons. A. A. Graham.

3. The Height of the Clouds Indicative of the Weather. A. A. Graham.
4. Movement of Flocks of Birds and Swarms of Insects. A. A. Graham.
5. Increased Efficiency of Telephonic Communication by Utilization of Its By-products. H. D. Stroud.
6. The Value of Cheap Water Power to Communities and the Modern Way of Procuring It. H. D. Stroud.
7. Coleoptera, *Amblychila*, and *Omus*. W. Knaus.
8. Scarabæidæ, *Plusiotis* and *Strategus*. W. Knaus.
9. Rare Coleoptera in Central Kansas. W. Knaus.
10. Interesting Notes on Captive Reptiles. L. C. R. Smyth.
11. Review of Arnold and Hannibal's "Marine Tertiary Stratigraphy of the North Pacific Coast of North America." A. B. Reagan.
12. Probable Origin of the Rings of Saturn. A. B. Reagan.
13. The Pure-food Law in Kansas. Mrs. Agnes A. Murray.
14. Some Experiments with the Mason Fruit Jar. Mrs. Agnes A. Murray.
15. The Use of Benzidine Hydrochloride in the Determination of Sulphates in Water. F. W. Bruckmiller.
16. Bacteriological Water Analysis Methods as Applied to Western Flora. C. C. Young.
17. A New Form of Petri Dish Cover. C. C. Young.
18. The Search for Potash in Kansas. E. E. Lyder.
19. Heating Values of Natural Gases in the Mid-continental Field. H. C. Allen.
20. A Concise Method for the Classification of Common Food Adulterations. E. H. S. Bailey.
21. The Puget Sound Marine Station. W. J. Baumgartner.
22. The Changes in the Apical Cell in Fern Stems, Relative to the Changes of Mass in the Same. Miss G. M. Charles.
23. The Migration of the Spiny Lobster. Bennet M. Allen.
24. Water Storage in Some of Our Dry Plains Plants. W. C. Stevens.
25. Composition and Properties of the Yucca Plant. C. A. Beath.
26. The Fermentation of Lactose in Milk by *Bacillus coli*. F. H. Billings and Herbert Foote.
27. The Measurement of the Internal Forces of Seeds. Chas. A. Shull.
28. Recent Advance Regarding the Foundations of Mathematics. U. G. Mitchell.
29. The Use of Platinic Chloride as an Alkaloidal Reagent in the Detection and Estimation of Organic Alkaloids and Poisons. George W. Watson.
30. The Analysis of the Chewing Gum of Commerce. Arthur E. Stevenson.
31. Kaw River Lake. J. E. Todd.
32. Cultivation of Medicinal Plants in the United States to Meet the Emergency Caused by European Conflicts. L. E. Sayre.
33. Nutritive Factors in Health and Disease. C. F. Nelson.
34. The Chert Gravels of Eastern Kansas. L. C. Wooster.
35. Corn Oil. L. E. Sayre.

35*a*. Chemical Analysis of Two Plants, Muscale Buttons and *Prunella vulgaris* (Reputed as an Antidote for Ivy Poisoning). L. E. Sayre.

36. Wood staining by fuming. J. A. Yates.
37. A Study of the Gelatinizing Agents, Pasty Materials, and Thickeners Used in Food Products. Leon A. Congdon.
38. The Loss of Nitrogen and Organic Matter in Cultivated Kansas Soils and the Effect of this Loss on the Crop-producing Power of the Soil. C. O. Swanson.
39. Kaw Valley Anticline. E. C. Warfel.
40. A Deep Well at Elmdale. A. J. Smith.
41. Municipal Illumination. J. A. G. Shirk.
42. America's Opportunity in Science. S. W. Tidd.
43. Malignant Tumors. J. W. McWharf.
44. Echinacea. Grace Meeker.

From this list the Program Committee selected No. 15, "The Use of Benzidine Hydrochloride in the Determination of Sulphates in Water," as the first to be read.

There was no discussion of the paper, and No. 18, "Search for Potash in Kansas," was the next paper posted, which was read by the author, E. E. Lyder.

Professor Sayre remarked on the old way of obtaining potash by lixiviating the ashes of wood or of corncobs and then using the lye to make soap, and by evaporating the lye in kettles or pots they obtained the dry product, or potash of commerce.

Professor Wooster thought the potash in Kansas soils was derived ultimately from the decomposition of granite from the Wichita and Ozark mountains.

Professor Twenhofel said that marine fossils are found in Kansas soils which are known to contain potash, but he regards it very uncertain how potash deposits were made in Kansas.

Professor Wooster asked if analyses had been made from the salt water from deep wells. Mr. Lyder said he had tested for bromine and iodine and one or two samples for potash, but he found only a very little.

Professor Bruckmiller said that in a well 2000 feet deep, in Denison, Tex., 226 parts per million of potash had been found, which was regarded as quite encouraging.

The next paper was No. 38, on "The Loss of Nitrogen and Organic Matter in Cultivated Kansas Soils and the Effect of this Loss on the Crop-producing Power of the Soil," by C. O. Swanson.

Professor Swanson remarked that Kansas soils are unusually rich in potassium, the average being about two per cent, but it requires organic matter to make this potassium available in crop production.

Miss Meeker inquired about the value of fallen leaves, and asked if they would introduce too much of acid elements.

Professor Swanson thought the lime in the soil will sufficiently neutralize the acids, and it was a good plan to save the fallen leaves and organic matter from stables and apply to the soil. Professor Swanson called attention to the government activities in getting potash from the kelp on our Pacific coast to secure the supplies of potassium needed in our fertilizers and other industries. Some things that do not enter into the constitution of plants are yet essential to their growth, *e. g.*, lime.

Professor Risser said that while sugar does not contain potash, yet the soil in which beets grow must contain it to make a good growth.

Professor Bailey remarked that the substances added to soils to improve their fertility must be in a soluble form. Now feldspar contains potassium, but is insoluble, and must be broken down before it is available. There are certain organic acids—humic acid and compounds of that class—in the soil which with manure from animals hasten the chemical action which breaks down the insoluble compounds.

Professor Swanson said that peat was old organic matter which decays very slowly, and is much more available when mixed with manure when it is added to worn soils.

Professor Twenhofel said that on the northern shores of Russia they have long used the sea weed, washed up on shore by the winds, as a fertilizer. The farmers spread it, finely broken up, on their fields. In the blue-grass region of Kentucky, famed for its fertility, it takes forty feet of limestone to produce one foot of soil, and required 4500 years to produce the soil of the blue-grass region. This demonstrates the immense value of the soil—the production of millions of years. One other point in soil fertility is the need of moisture. In some of the arid regions they can never get a crop. By storing the water a large per cent of these arid regions can be brought to fertility.

Professor Sayre spoke of a farm in Michigan with very deep black muck soil. The proprietor said he used a fertilizer rich in potash and continued to get good crops of peppermint, which he was cultivating.

Professor Swanson said that peat soils are low in potassium, and if cultivated to corn after a year or two would get stalks but no ears, but if you supply potassium the corn will produce ears.

President Harshbarger said that his hobby was roses, and that he raked up all the leaves he could get on his own and on his neighbors' lawns and piled them up till decomposed and then raked the leaves back on the roses; only he had to be careful not to get the soil too light for roses. The black gumbo soil we have is rich enough in potash. I need a fine light loam.

Professor Swanson said the average Kansas soil contains almost 2 per cent of potassium, while some of the commercial fertilizers do not contain more than 1.66 per cent of potassium.

Professor Wooster said that as peppermint oil is made of carbon dioxide, water and sunshine, so the growing of peppermint does not impair the soil, provided the balance of the plant is returned to the soil.

Professor Sayre said we are apt to be misled by conclusions of that sort, for while the statement is correct so far as the oil is concerned, the thing which produces the skeleton which holds the material for the liberation of the oil requires potash, as stated by the agriculturists.

Professor Twenhofel asked whether there are not some things in the soil which do not enter into the plant at all and may yet aid its growth.

Professor Swanson answered yes; the plant does not use any soil carbon, yet the soil carbon is half of the organic matter of the soil, and is one of its most beneficial constituents. So all plants need for their tissues a comparatively small amount of lime, but the soil must have a great deal of lime in order to have proper conditions for plant growth. The soil must furnish the essential elements of a plant or it will not bear a fertile seed—will not make a life cycle. If calcium, phosphorus, potassium or iron is absent the plant will not make a life cycle.

Professor Risser said that beets grown in soil with low potash content have 14 per cent of sugar, while if the soil had a high potash content the beets would contain up to 20 per cent of sugar, which shows that potash is a very essential element in making the beet.

The president remarked that in putting up a building we need scaffolding; so in plant growth the potash may perform this office.

The next paper read was No. 33, "Nutritive Factors in Health and Disease," by C. F. Nelson.

Professor Bailey inquired if the investigation carried on would indicate that life would be sustained and the animal grow through aminic acid.

Professor Nelson replied that this had been done very conclusively in this case, and there are cases recorded where man has been kept neither losing nor gaining in weight for about a week.

The next paper called for was No. 23, "The Migration of the Spiny Lobster," by B. M. Allen.

Mrs. Smyth asked if the migration is affected by the current.

Professor Allen said those that went farthest went with the current, and in general along the shore the currents come that way. The water was ten to twelve fathoms deep. They travel almost wholly by walking. In one or two cases lobsters scrambled along on the surface of the water by a quick motion of the tail.

Professor Risser said there were some experiments carried on at Woods Hole laboratory which showed that the migration was in any direction, but the lobster is a rather contented individual and does not carry about very much, and does not care to worry himself, so to speak. The distance traveled as indicated by Professor Allen's paper may be but a small part of the distance the animal may have wandered back and forth in all this time, and not at any time taken any considerable trip. He may travel a great many miles more than those tags would indicate. With reference to their going into traps, we know that the traps are baited with the food he likes best and that his natural ability for getting food is small, for scarcely would he come to your trap again if he could get food elsewhere. I will say that the fishermen were very good, indeed, and I doubt if the original fishermen would have done more.

Professor Allen remarked that the Japanese and other fishermen were willing to furnish fine marketable lobsters which would bring two or three dollars in the market, without any return at all. In reply to a question by Professor Wooster, Professor Allen remarked that sex or age of the lobsters made no difference, so far as the records show.

The next paper, No. 32, "The Cultivation of Medicinal Plants in the United States," was read by its author, Dr. L. E. Sayre.

Miss Meeker inquired about the value of these plants. She had a friend who had been growing ginseng for a number of years, and in consequence of the war he was offered only a dollar a pound for the root, and I wondered what he usually got.

Professor Sayre did not know the market quotations, and did not think that America was the best market for it. If a plant has a commercial value there must be something to support it. So far as ginseng is concerned, it has practically no value in medicine here in the United States. In China they pay large sums for it and there is a great demand. The plant has not been very well investigated in this country, because physicians have not a method of treatment with it. In growing it you can succeed better in cuttings than from seed.

Miss Meeker said that her friend puts the seed in the ground for a certain time and lets it stay, but it takes two years to bring it to the point of germination.

The treasurer's report was read, as follows:

RECEIPTS.		
Balance from 1913	$900.62	
Dues	68.00	
Interest	33.19	
Sale of Transactions	5.24	
Total		$1,007.05
DISBURSEMENTS.		
Stenographer	$6.13	
Expenses of Executive Committee	1.48	
Total		$7.61
Balance on hand		$999.44

The auditors reported the account correct and approved it. On motion, the treasurer's report was adopted.

The next paper taken up was No. 34, "The Chert Gravels of Eastern Kansas," by L. C. Wooster.

The president called for questions or remarks.

Professor Todd said he did not understand the chert gravels to be a sign of the primary extension of the Benton from any particular point. Professor Wooster replied that the chert gravels should be the measure of the form and extension of the Permian.

Professor Todd remarked that he had a paper for to-morrow about chert. There is chert in the vicinity of Lawrence, and we have a line of it following the hills, 125 to 150 feet above the present course of the Kansas river, with lines of gravels. St. Marys and west of Wamego there are specific surfaces that are covered with chert lying 125 to 150 feet above the present stream.

Professor Yates said it seemed as though there were ledges of this gravel. I recall a quite prominent ledge of the gravel at Ottawa, probably five feet above the Mesozoic. Now this interval in the valley of the Mesozoic is analogous to the valley of the Cottonwood that is spoken of, and also the stream at Eureka.

The next paper read was No. 29, on "The Use of Platinic Chloride in Estimating Organic Alkaloids," by G. W. Watson.

Professor Bailey inquired what would be the effect supposing other alkaloids were present, as, for example, morphine.

Professor Watson replied that their difference in solubility would distinguish them.

The Academy next listened to a very interesting and instructive lecture by Dr. E. L. Nichols, head professor of physics in Cornell University; subject, "Artificial Daylight."

The members of the Academy then repaired to the Y. W. C. A. building, where an excellent banquet was served, which was followed by pleasant speeches by Doctor Nichols and others.

WEDNESDAY, DECEMBER 23.

The Academy resumed its sessions at the supreme court room, and reports of committees were called for.

The Committee on Membership reported the following names of persons applying for annual membership:

F. W. Bruckmiller, chemist state water survey, Lawrence.

W. R. Cleveland, superintendent of schools, Mulberry.

L. J. Congdon, assistant food inspector, Board of Health, Topeka.

Margaret Coventry, professor of chemistry, Manual Training Normal, Pittsburg.

Herman Douthitt, assistant professor of zoölogy and paleontology, University of Kansas, Lawrence.

Leroy Hughbanks, minister and lecturer, Anthony.

A. W. Jones, professor of geology, Wesleyan College, Salina.

U. G. Mitchell, associate professor of mathematics, University of Kansas, Lawrence.

B. W. Merwin, field work in archæology, Savonburg.

Robert Mohler, A. B., teacher, McPherson.

C. F. Nelson, associate professor of physiological chemistry, Lawrence.

Edison Pettit, assistant in physics, Washburn College, Topeka.

S. L. Redman, professor of physics, Manual Training Normal, Pittsburg.

B. W. Scheib, professor of agriculture, Manual Training Normal, Pittsburg.

M. M. Schmidt, insurance and student, Home City.

George W. Tidd, professor of physics, Normal School, Emporia.

The following are recommended for life membership:

L. C. Wooster, Ph. D., professor of geology, Normal School, Emporia.

J. A. Yates, professor of geology and physics, Manual Training Normal, Pittsburg.

On motion, the rules were suspended and the secretary cast the ballot, and the persons above named were declared duly elected.

Prof. J. A. Yates presented paper No. 36, "Wood Staining by Fuming." It was illustrated by many specimens of his work and received hearty applause. Professor Yates said it was claimed that catalpa wood would not season; that one person had kept it in his shop for six months, and while it was seasoned on the outside, the inside was perfectly green.

In discussing this question several members thought there must be mistake in the facts as reported.

Papers Nos. 7, 8 and 9 were next taken up by Mr. Knaus, their author, who exhibited specimens of rare Coleoptera. Some of these you never see during daylight, and it is only by chance that the collector can find them feeding early in the morning. The genus *Omus* is found exclusively in the region west of the Sierra Nevada mountains, and there is no record of any having been taken in the East. It is exceedingly difficult to add these species to one's collection, for only two or three parties collect them in California. The collection here exhibited is probably the third or fourth best collection in this country.

The next paper, No. 43, "Malignant Tumors," was read by its author, Doctor McWharf.

Professor Yates asked if this disease could be communicated easily.

Doctor McWharf replied, "I did not say easily; I said it could be communicated." There are a number of cases on record of nurses who devoted most of their time to the care of cancer patients, and almost all of these nurses have cancer.

Professor Wooster said he was interested and somewhat surprised at Doctor McWharf's statement last year of the mortality due to cancer, and wanted to know his present idea on this point.

Doctor McWharf: "We have not improved that any."

Professor Bailey said it seemed to him rather remarkable that sulphates should be accused of having anything to do with this disease, especially as we know that sulphates are so important in killing these lower organisms. We could find some place where coal is not used, and so could not get sulphates. If in this place the excess of cancer was not found, the contention would be proven.

Professor Wooster said that while sulphates have a tendency along this line, is it not possible that they may weaken the resisting power of the cells to the inroads of the parasite?

A member remarked that the conclusion is that we at present knew nothing about the origin of cancer, and that this Academy should coöperate with those who make it a serious study. Most of the advertised cures are brought out by ignorant quacks.

The next paper was No. 41, "Municipal Illumination," by J. A. G. Shirk.

Professor Yates asked what was the length of the blocks where this system was installed. The answer was 300 feet. The system was overhead because the street-car company wanted to use the same, and the expense of poles was paid for by abutting property owners. The street-car company and the electric-light company provide the light.

Miss Meeker asked how this could be municipal illumination, since the street-car company is a corporation. It was answered that the city does not own the electric-light plant; it is a private plant.

Professor Yates said that in the last six or eight years no greater improvement had been made in any city than in the lighting system. In our city of 3700 people we installed our present system about four years ago. On each side of the street or block we have eight poles to the block, and we have two lights to the pole. We cut out the old waterworks main, which was in the center of the street, and laid it on one side, just below the cable of the electric light where both can be reached in a few minutes without tearing up the pavement. We are using the mazda light, and will soon have them changed to the tungsten. I have never heard any one complain about this civic improvement.

The next paper, No. 44, was by Miss Meeker, subject, "Echinacea," or "Braunesia."

Miss Meeker said: "Sometime about February 15 Doctor Sayre asked me if I would send cuttings or seeds of the plant listed as *Echinacea,* and immediately I went out to a quarry close to the city limits and found it, but it was not easy to dig, and I did not get very satisfactory roots. The plants of a number of last season's growth had branches, and the seeds were just ready to drop, and the next day I sent the gentleman the plant and a package of seeds and the roots. When Doctor Sayre presented it to the Academy I remembered we did not have that species at all where I grew up; that it is a western plant, and I should have gone back for more of it, determined the species and written a paper about it as suggested by Doctor Sayre. The seed shatters out in the fall and comes up in the spring, or waits a year. Mr. Bartholomew says that the plant grows in the medical botanical gardens in Washington and has an understood commercial value. Doctor McWharf brought me a book which stated that the western Kansas people invariably called it 'nigger-head.' My aunt, who is a botanist, called it 'hedge-hog flower.' It is also called 'the Kansas daisy,' 'black Sampson.' It is used sucessfully as an antidote to rattlesnake poison."

Prof. J. E. Todd's paper, No. 31, "The Kaw River Lake," was next taken up. Professor Todd announced that his paper was as yet incomplete, but from a large map on the wall he illustrated how the lake is located, and he referred to our late honored member, Prof. B. B. Smythe, whose papers first drew his attention to this subject. This old glacial lake has scattered boulders at least as far north as Manhattan, as reported by Mr. Robert Hay, and they are from 125 to 150 feet above the present level of the Kansas river. The layers of chert, gravel, boulders and silt are particularly well shown in a channel which extends from the northeastern part of Manhattan northward and comes out crossing the lake and Blue some two or three miles north of Manhattan.

Now, this valley is a good sample of the valley of the Kansas river preceding the coming of the ice, as is recorded by the deposits of chert and gravel near the bottom of the channel, and the streams of ice frequently deposited granite boulders in Louis Lake, and silt some thirty feet in depth, so that we have the relation of the boulders, silts and sand, showing the marks of the old channel, and from the divide between Kansas river and Mill creek just southwest of the edge of the ice sheet, which is marked by granite boulders as large as haystacks to the southwest of this edge of ice.

These boulders were covered with a layer of silt fifteen or twenty feet in thickness, so that we have every evidence of a rapid stream when the boulders were deposited. There is no evidence of any boulder having been on the south of Manhattan. There is a valley, which is now occupied by the railroad from McFarland to Alma, fifty or sixty feet lower than the former valley. This valley shows no boulders except in the southwestern portion, where we may see it is so related that the boulders may have worked back into this tributary side channel. The chert gravels mark a deposit of the preglacial Kansas river, and show its course passing through here north of Manhattan. There are no boulders south of Manhattan, but in Reservoir Hill, north, they are abundant. The tracings of the preglacial river are found near St. Marys, north of Topeka, and were distinctly traced along to the northeast of Lawrence. Into this valley came the ice bed of the Kansas streams, filling the valley from Wamego to Lecompton, passing all the drainage around the edge of the ice sheet and then into this lake. As the ice receded, the first effect would be to swell the stream and carry its sediment along this channel, and perhaps fill it up, and when the ice receded the stream would revert to its original channel, and perhaps largely drain the lake, whose bottom would be no lower down than the level of the preglacial channel. As the ice receded there may have been a cutting down of the channel to its original depth or deeper, as may be observed in the deep deposits of sand north of St. George. Since the Glacial Period the river bed here has been cut down 250 to 300 feet below the preglacial channel, so that if there were any boulders here they would all have been carried to the lower depths of the Kaw.

Professor Todd asks for more time to continue his investigations before presenting his revised paper to the Academy for publication.

The next paper, No. 20, was by Prof. E. H. S. Bailey, "A Concise Method for the Classification of Common Food Adulterations." This paper was listened to with much interest, but there was no discussion.

The next paper, No. 39, "The Kaw Valley Anticline," was read by its author, Mr. E. C. Warfel. Specimens were exhibited of a substance like granite which was struck at the depth of 1000 feet in each of two holes which were drilled about half a mile apart, and some petroleum which came from a well bored north of Wamego.

On motion, Mr. Alva Smith's paper was called for before any discussion of Mr. Warfel's paper, since the subjects were kindred.

Mr. Smith then read his paper, No. 40, "A Deep Well at Elmdale." He said his attention was called to gas development at Elmdale about thirty years ago, when a well was dug there which at thirty feet deep had such a flow of gas that they could not use the water and abandoned the well. An old lady and gentleman, owners of the well, would not allow anything to be done with it, and the gas continued to bubble through the water for a number of years. Finally they drilled at Elmdale about five years ago and struck gas at depths of from 40 to 500 feet, three or four different sands producing it. We are on a line with the gas at Newkirk, Okla., and it ought to space within ten or twelve miles of this gas. For instance, we have El Dorado, within two miles of the line; then we pass further up within five or ten miles from Burns, and then within a mile over to Elmdale, and within five or six miles of Wilsey, where five years ago they found gas at a depth of 500 feet, and the line passes within a mile of the well at Dwight.

Professor Wooster said, in reference to the so-named granite struck in the borings near Zeandale, that the materials composing this rock may have been washed there by the various streams of water, and then in presence of a saline solution there was a process of cementation, and a stone resembling granite may have been formed from the sandstone, as I have noticed in my work in Wisconsin, where there was sandstone. In the specimen exhibited there is only 16 per cent of feldspar, which in the real granite exceeds all the other mineral constituents.

Therefore, I judge, this stone is merely a local cementation of sandstone. There are two theories as to the origin of oil and natural gas. In the case of organic matter and gas that comes from the interior of the earth, wherever there is a deep enough fissure, when the gas reaches a higher level it combines with the organic matter, giving us our oils and gas. Under the Arkansas river in Oklahoma there is a downfall of two miles nearly in the strata, opening down to an unknown depth, and we pump gas and oil from the depths of the interior of the earth, which is according to the second theory mentioned. Now in the anticline this gas is natural, and exactly in line with the map in the same general anticline that comes up from Oklahoma, and so our gas and oil are not derived from the interior of the earth below Kansas, but all comes from the south.

The next paper, No. 37, "A Study of the Gelatinizing Agents and Thickeners Used in Food Products," by L. A. Congdon, was read and discussed. A member asked if there is any reason for the preference which some have for cane sugar in making jellies.

Mr. Congdon answered that chemically there is no difference between cane and beet sugar.

The Academy adjourned to the Y. W. C. A. building, where a generous banquet had been prepared. At the close of the banquet Doctor Nichols made some remarks in which he spoke very feelingly of his former residence in Kansas and his connection with the Academy.

Returning to the supreme court room the report of the Committee on Nominations was called for, and the chairman reported the following nominations:

President, J. A. G. Shirk, Pittsburg.
First vice president, J. E. Todd, Lawrence.
Second vice president, F. G. Agrelius, Emporia.
Treasurer, L. D. Havenhill, Lawrence.
Secretary, J. T. Lovewell, Topeka.

On motion the rules were suspended, and the report was adopted. President Harshbarger cast the ballot, and the above-named officers were declared duly elected for the ensuing year.

The committee also reported the following nominations for elective members of the Executive Council, who likewise, on suspension of the rules, were declared duly elected:

Members of the Executive Council: W. A. Harshbarger, J. A. Yates, L. C. Wooster, J. T. Willard.

Professor Twenhofel made a short talk on the subject of his paper, with the expectation of having a more complete discussion at a future meeting.

It was voted that other papers on the program and not read be referred to the Publication Committee.

No further business being reported, the forty-seventh annual meeting was adjourned *sine die.*